

CLAIMS

What is claimed is:

1. A method using a test fixture having a first pattern of contacts for the burning-in and testing ball grid array semiconductor packages having a second pattern of contacts comprising:
providing a burn-in and test fixture having a pattern of contacts having a first predetermined pattern of another unrelated semiconductor die having a second pattern of contacts;
providing a plurality of ball grid array semiconductor packages connected to a substrate for said plurality of ball grid array semiconductor packages, each semiconductor package comprising:
a portion of said substrate, said portion of said substrate having a first surface and a second surface opposite the first surface and having an aperture through said portion of said substrate in communication with the first and second surfaces of the substrate;
attaching a semiconductor device having an active surface with a plurality of bond pads thereon to one of the first and second surfaces of the substrate with the plurality of bond pads exposed within the aperture of the substrate;
forming a plurality of ball grid array connective elements on one of the first surface and the second surface of the portion of said substrate;
forming a plurality of test pads on a severable portion of the portion of said substrate, the plurality of test pads arranged in a first preselected pattern, said first preselected pattern of contacts having a predetermined pattern of another unrelated semiconductor die for eliminating modification of the burn-in fixture for mating with the ball grid array semiconductor package;
forming a plurality of substrate bond pads on one of the first surface and the second surface of the portion of said substrate;
connecting selected bond pads of the plurality of bond pads on the active surface of the semiconductor device with selected substrate bond pads of the plurality of substrate bond pads using a plurality of bond wires extending therebetween;

providing a first plurality of circuit traces selectively connecting the selected substrate bond pads of the plurality of substrate bond pads with selected connective elements of the plurality of connective elements;

providing a second plurality of circuit traces selectively connecting the selected connective elements of the plurality of connective elements with selected test pads of the plurality of test pads;

placing the at least one ball grid array semiconductor package in a burn-in and test apparatus having a plurality of test probes;

contacting selected test probes of the plurality of test probes with the selected test pads of the plurality of test pads;

burning-in and testing the semiconductor device by applying and routing electrical energy to the selected test pads of the plurality of test pads by way of the selected test probes of the plurality of test probes; and

severing said portion of said substrate from said substrate to form at least one ball grid array semiconductor package.

2. The method of burning-in and testing ball grid array semiconductor packages of claim 1, wherein the providing the plurality of test pads further comprises arranging the plurality of test pads in a thin small outline package pin-out pattern.

3. The method of burning-in and testing ball grid array semiconductor packages of claim 1, wherein providing at least one of the first and second pluralities of circuit traces further comprises performing at least one of the first and second pluralities of circuit traces on a tape and adhering at least a portion of the tape onto at least a portion of the substrate.

4. The method of burning-in and testing ball grid array semiconductor packages of claim 1, further comprising severing at least one of the plurality of test pads from the substrate after burning-in and testing.

5. The method of burning-in and testing ball grid array semiconductor packages of claim 1, further comprising conducting the burning-in and testing of the semiconductor device in test tooling comprising a ball grid array semiconductor package holder and a probe head containing the plurality of test probes arranged in a pattern complementary to the preselected pattern of the plurality of test pads.

6. The method of burning-in and testing ball grid array semiconductor packages of claim 1, further comprising attaching the semiconductor device and the plurality of connective elements to the same surface of the first surface and the second surface of the substrate.

7. The method of burning-in and testing ball grid array semiconductor packages of claim 6, further comprising attaching the plurality of substrate bond pads on one of the first surface and the second surface of the substrate opposite to which the semiconductor device and the plurality of connective elements are attached.